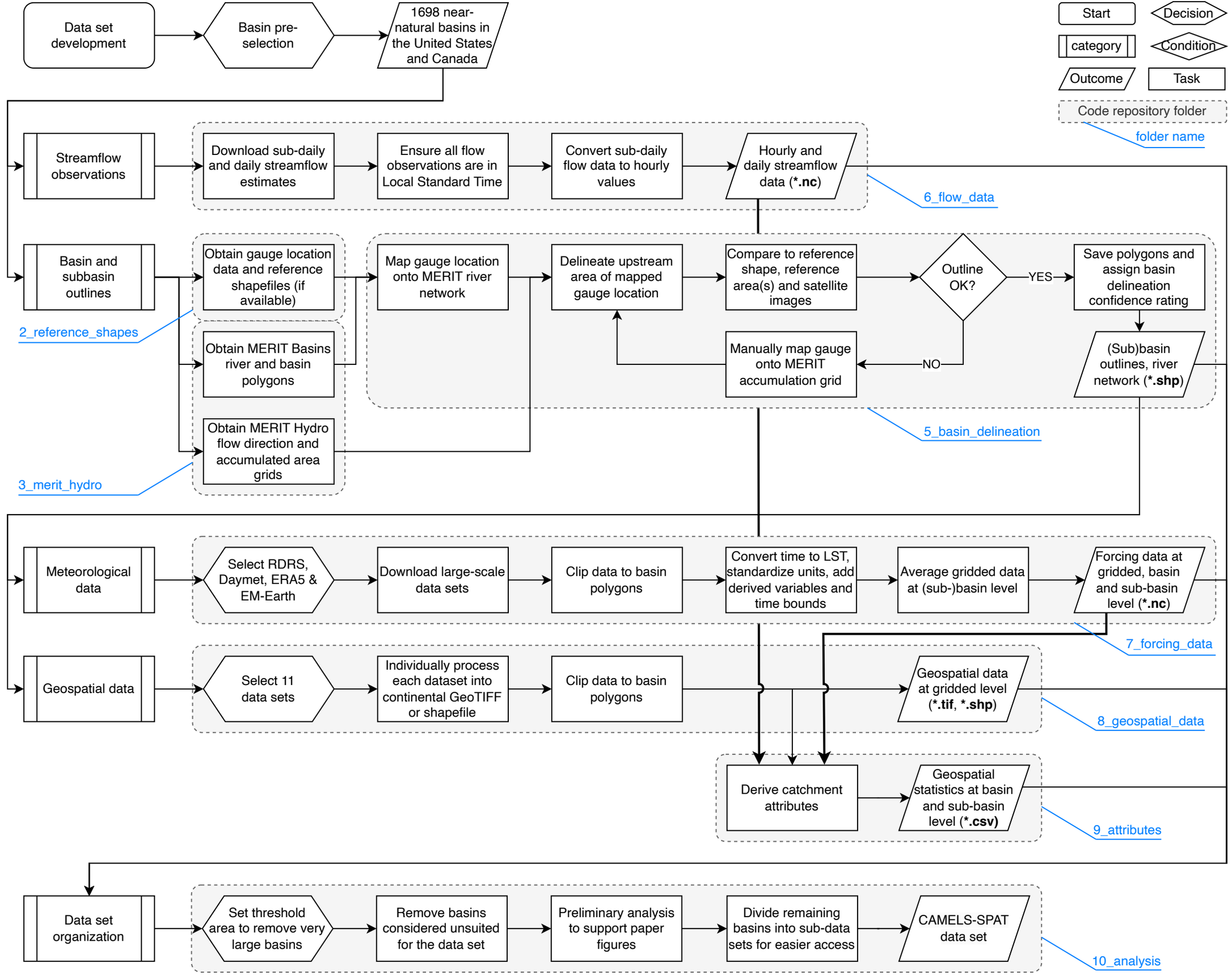
Start
Decision
category
Condition
Outcome
Task
Code repository folder
folder name
Data set development
Basin pre-selection
1698 near-natural basins in the United States and Canada
Streamflow observations
Download sub-daily and daily streamflow estimates
Ensure all flow observations are in Local Standard Time
Convert sub-daily flow data to hourly values
Hourly and daily streamflow data (*.nc)
6_flow_data
Basin and subbasin outlines
2_reference_shapes
Obtain gauge location data and reference shapefiles (if available)
Obtain MERIT Basins river and basin polygons
Obtain MERIT Hydro flow direction and accumulated area grids
3_merit_hydro
Map gauge location onto MERIT river network
Delineate upstream area of mapped gauge location
Compare to reference shape, reference area(s) and satellite images
Outline OK?
YES
NO
Save polygons and assign basin delineation confidence rating
Manually map gauge onto MERIT accumulation grid
(Sub)basin outlines, river network (*.shp)
5_basin_delineation
Meteorological data
Select RDRS, Daymet, ERA5 & EM-Earth
Download large-scale data sets
Clip data to basin polygons
Convert time to LST, standardize units, add derived variables and time bounds
Average gridded data at (sub-)basin level
Forcing data at gridded, basin and sub-basin level (*.nc)
7_forcing_data
Geospatial data
Select 11 data sets
Individually process each dataset into continental GeoTIFF or shapefile
Clip data to basin polygons
Geospatial data at gridded level (*.tif, *.shp)
8_geospatial_data
Derive catchment attributes
Geospatial statistics at basin and sub-basin level (*.csv)
9_attributes
Data set organization
Set threshold area to remove very large basins
Remove basins considered unsuited for the data set
Preliminary analysis to support paper figures
Divide remaining basins into sub-data sets for easier access
CAMELS-SPAT data set
10_analysis